



[The Poynter Institute](#)

[Menu](#)

[Donate](#)

State Editions

- [California](#)
- [Florida](#)
- [Illinois](#)
- [Iowa](#)
- [Missouri](#)
- [New York](#)
- [North Carolina](#)
- [Pennsylvania](#)
- [Texas](#)
- [Virginia](#)
- [West Virginia](#)
- [Vermont](#)
- [Wisconsin](#)
- [Michigan](#)

Issues

- [All Issues](#)
- [Online hoaxes](#)
- [Coronavirus](#)
- [Health Care](#)
- [Immigration](#)
- [Extremism](#)
- [Taxes](#)
- [Marijuana](#)
- [Environment](#)
- [Crime](#)
- [Guns](#)
- [Foreign Policy](#)
- [LGBTQ](#)

People

- [All People](#)
- [Joe Biden](#)
- [Kamala Harris](#)
- [Charles Schumer](#)
- [Mitch McConnell](#)
- [Bernie Sanders](#)
- [Nancy Pelosi](#)
- [Donald Trump](#)

Media

- [PunditFact](#)
- [Tucker Carlson](#)
- [Sean Hannity](#)
- [Rachel Maddow](#)
- [Bloggers](#)
- [PolitiFact Videos](#)

Campaigns

- [2020 Elections](#)

Truth-o-Meter

- [True](#)
- [Mostly True](#)
- [Half True](#)
- [Mostly False](#)
- [False](#)
- [Pants on Fire](#)

Promises

- [Biden Promise Tracker](#)
- [Trump-O-Meter](#)
- [Obameter](#)
- [Latest Promises](#)

About Us

- [Our Process](#)
- [Our Staff](#)
- [Who pays for PolitiFact?](#)
- [Advertise with Us](#)
- [Suggest a Fact-check](#)
- [Corrections and Updates](#)

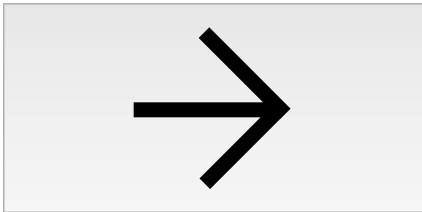
[Donate](#)

**Follow us**



**The Facts Newsletter**

[Sign up](#)



**Stand up for the facts!**

Our only agenda is to publish the truth so you can be an informed participant in democracy. We need your help.

[More Info](#)

**I would like to contribute**

Monthly



VIVAYA

## Designed for Wide Feet and Bunions

[SHOP NOW >](#)

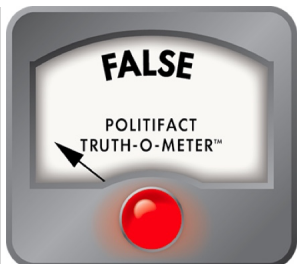
The advertisement features two images of shoes. The left image shows a pair of shoes with bows: a pink one with a blue bow and a blue one with a pink bow. The right image shows a pair of plain pink shoes. The text 'VIVAYA' is in the top left corner of the image area. The headline 'Designed for Wide Feet and Bunions' is in a large, bold, black serif font. Below it is a black button with the text 'SHOP NOW >' in white.



[Steve Milloy](#)

stated on June 7, 2023 in on “The Ingraham Angle”:

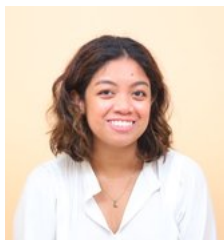
Particulate matter, found in wildfire smoke, has “no effect” on human health and is “total junk science.”



- [Science](#)
- [PunditFact](#)



[Steve Milloy](#)



By [Loreben Tuquero](#) June 20, 2023

## Particulate matter is not ‘junk science.’ Decades of research show it affects human health

### If Your Time is short

- The health effects linked to particulate pollution exposure have been studied and documented for decades. These effects include respiratory and cardiovascular health problems and premature death.
- The Environmental Protection Agency’s assessment of particulate matter shows clear evidence that exposure to particulate matter affects health.

[See the sources for this fact-check](#)

Wildfires in Canada drastically affected the air quality in multiple U.S. states in June’s second week, leading residents to reach for face masks to mitigate risks brought about by inhaling particle pollution.

On Fox News, a guest on "The Ingraham Angle" claimed these concerns were unfounded.

Steve Milloy, who served in former President Donald Trump’s Environmental Protection Agency transition team, claimed "there’s no health risk" brought about by the air quality, and wildfire smoke is "natural."

Host Laura Ingraham brought up media coverage that advises people to wear face masks, as they had during the COVID-19 pandemic. Milloy again dismissed health concerns.

"This is all particulate matter, but particulate matter was not a concern until EPA invented it as one in the 1990s," he said. "They have no effect. EPA has all this testing on real live human beings that shows no effect. This is total junk science."

Milloy, a biostatistician and lawyer, founded the website JunkScience.com. We wanted to examine his claim that not even EPA research shows health concerns about particulate matter are legitimate.

We found a breadth of evidence that shows he’s wrong. Here’s why.

What is particulate matter?

[Particulate matter](#), or particle pollution, generally refers to a mixture of solid and liquid droplets suspended in the air. It is a main component of [wildfire smoke](#). These microscopic solids or liquid droplets are so small that they can be inhaled and affect the lungs and heart.

According to the [EPA](#), particles less than 2.5 micrometers in diameter, also known as PM 2.5, pose the greatest risk to health. The CDC said [particles](#) called PM 10 can irritate the eyes, nose and throat, and PM 2.5 can get into the deep parts of the lungs, or even into blood.

Particle pollution is [associated](#) with serious health effects, including nonfatal heart attacks, an irregular heartbeat, aggravated asthma, decreased lung function and premature death, according to the EPA. It has also been [linked](#) to lung cancer and problems with babies at birth.

People with heart or lung diseases, older adults, babies and children are [most at risk](#) of experiencing health effects associated with particle pollution.

Shayla Powell, an EPA spokesperson, told PolitiFact that the health risks of inhaling fine particles within smoke are well documented in thousands of peer-reviewed studies.

EPA research bears this out.

What does EPA's research show?

[The Clean Air Act](#), first enacted in 1955, [required](#) the EPA to establish ambient air quality standards for air pollutants that endanger public health or welfare. Particulate matter is one of six air pollutants with such standards. The EPA established these standards for particulate matter in 1971.

The agency reviews scientific data underpinning these standards every five years.

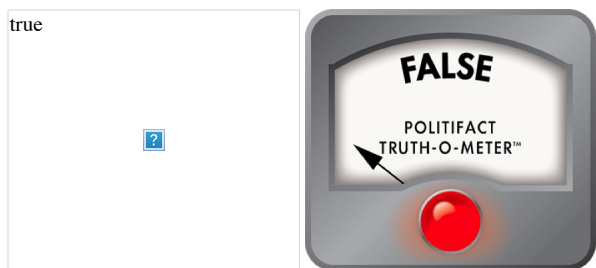
#### **Featured Fact-check**



[TikTok posts](#)

stated on May 30, 2023 in a video

[Roseanne Barr made a video of a rainbow in a sprinkler questioning 'what the heck is in our water supply.'](#)



By Grace Abels • May 31, 2023

When PolitiFact reached out to Milloy, he criticized the science behind the EPA’s regulation of particulate matter and cited studies and EPA testimony that supposedly show no causation between particulate matter and health effects or death.

The studies he cited were either epidemiological or controlled human exposure studies. [Epidemiology](#) is used to find the causes of health outcomes and diseases in populations. Meanwhile, in controlled human exposure studies, human volunteers are "[intentionally exposed](#) to pollutants by inhalation under controlled experimental conditions."

Milloy claimed that EPA’s epidemiological studies don’t show causation between particulate matter exposure and health effects — but that’s an oversimplification.

The agency’s [2019](#) evaluation of the scientific data to inform its standards for particulate matter — its latest report — outlined how the agency determined relationships between particulate matter exposure and health effects.

- A "causal relationship" means there is clear evidence that exposure to particulate matter has been shown to affect health.
- A "likely to be causal relationship" means there are studies that are not explained by chance or other biases, but uncertainties remain in the evidence.

What constitutes "clear evidence"? Studies that show particulate matter exposure affected health, with alternative explanations ruled out. This can be demonstrated by controlled human exposure studies, or observational studies that cannot be explained by plausible alternatives or are supported by other evidence, such as animal studies.

The EPA assessed risks in several categories for health effects, including respiratory; cardiovascular; reproduction and fertility; metabolic; and mortality. A "causal relationship" was found between particulate matter exposure and cardiovascular effects, as well as death.

### How is particulate matter exposure linked to health effects?

Indicator		PM 2.5	PM 10-2.5
Respiratory	Short-term exposure	Likely causal	Suggestive of a causal relationship
	Long-term exposure	Likely causal	Inadequate
Cardiovascular	Short-term exposure	Causal	Suggestive of a causal relationship
	Long-term exposure	Causal	Suggestive of a causal relationship
Metabolic	Short-term exposure	Suggestive of a causal relationship	Inadequate
	Long-term exposure	Suggestive of a causal relationship	Suggestive of a causal relationship
Nervous System	Short-term exposure	Suggestive of a causal relationship	Inadequate
	Long-term exposure	Likely causal	Suggestive of a causal relationship
Male/female reproduction and fertility	Long-term exposure	Suggestive of a causal relationship	Inadequate
Pregnancy and birth outcomes		Suggestive of a causal relationship	Inadequate
Cancer	Long-term exposure	Likely causal	Suggestive of a causal relationship
Mortality	Short-term exposure	Causal	Suggestive of a causal relationship
	Long-term exposure	Causal	Suggestive of a causal relationship

Source: Environmental Protection Agency, 2019 Integrated Science Assessment (ISA) for Particulate Matter



We asked Michael Kleinman, an environmental toxicology professor at the University of California, Irvine, about Milloy’s claim. He highlighted the causal relationship between PM 2.5 exposure and cardiovascular deaths and disease.

"This finding is based on critical review of dozens of well-designed epidemiological studies and an evaluation of the weight of evidence," he said.

Some members of the Clean Air Scientific Advisory Committee — which is an independent panel that advises the EPA — have, like Milloy, raised concerns about how the EPA determines causal relationships. The committee consulted on this matter with experts, including Duncan Thomas, emeritus professor of population and public health sciences at the University of Southern California.

Thomas referred us to his [2019](#) response on this matter. He said that consistent findings from numerous observational studies, short-term human experimental studies and animal experiments are sufficient for a causal interpretation of air pollution’s likely effect on health.

He cited a 2020 [Epidemiology journal article](#) discussing methods and challenges in determining causation in air pollution epidemiology. It said, "Policymakers cannot wait for the data, study designs, and analytic tools that will ensure unarguable causal inferences: stalling until perfect evidence arises is irresponsible and does not protect public health."



The interview on "The Ingraham Angle" was not the first time Milloy denied the health effects of air pollution. In the 1990s, he ran a [front group](#) for tobacco company Philip Morris that worked against air pollution regulation efforts. Milloy questioned scientific findings about the effects of secondhand smoke.

The EPA under Trump disbanded its Particulate Matter Review Panel, which Milloy considered a "[huge win](#)."

Our ruling

Milloy claimed that EPA research on the effects of particulate matter on humans "shows no effect" and is "total junk science."

The EPA assessed extensive scientific data on the human health effects of particulate matter exposure. The agency found clear evidence of a causal relationship between exposure to small particles and heart problems, and death.

We rate this claim False.



### Stunning New Camper Vans

New Camper Vans Are Turning Heads And Finally On Sale.  
Discover Deals With Top Searches



#### Our Sources

FOX News, "The Ingraham Angle" episode, June 7, 2023

Environmental Protection Agency, [What is Particle Pollution?](#), accessed June 12, 2023

Environmental Protection Agency, [Particulate Matter \(PM\) Basics](#), accessed June 8, 2023

CDC, [Particle Pollution](#), accessed June 9, 2023

Environmental Protection Agency, [Why Wildfire Smoke is a Health Concern](#), accessed June 8, 2023

Environmental Protection Agency, [2019 Integrated Science Assessment \(ISA\) for Particulate Matter](#)

Environmental Protection Agency, [Health & Environmental Research Online ISA - PM Supplement \(2022\)](#)

Congressional Research Service, [Clean Air Act: A Summary of the Act and Its Major Requirements](#), Sept. 13, 2022

CDC, [What is Epidemiology?](#), accessed June 15, 2023

National Academies of Sciences, Engineering, and Medicine, [Controlled Human Inhalation-Exposure Studies at EPA Summary](#), March 28, 2017

Email interview, Steve Milloy, founder of JunkScience.com, June 9, 2023

Email interview, Michael Kleinman, professor of environmental toxicology at the University of California, Irvine, June 9, 2023

Email interview, Duncan Thomas, emeritus professor of population and public health sciences at the University of Southern California, June 16, 2023

Clean Air Scientific Advisory Committee, [Responses to CASAC Questions on the Ozone ISA from Consultant Dr. Duncan Thomas](#), accessed June 16, 2023

Epidemiology, [In Pursuit of Evidence in Air Pollution Epidemiology: The Role of Causally Driven Data Science](#), accessed June 19, 2023

The Intercept, [The Right-wing War on Clean Air](#), June 11, 2023

Steve Milloy, Scare Pollution: Why and How to Fix the EPA, accessed June 14, 2023

### Read About Our Process



[The Principles of the Truth-O-Meter](#)

## Browse the Truth-O-Meter

### More by Loreben Tuquero



slide 4 to 6 of 15



**Particulate matter is not 'junk science.' Decades of research show it affects human health**



- [Steve Milloy](#)

stated on June 7, 2023 in on “The Ingraham Angle”:

[Particulate matter, found in wildfire smoke, has “no effect” on human health and is “total junk science.”](#)



By Loreben Tuquero • June 20, 2023



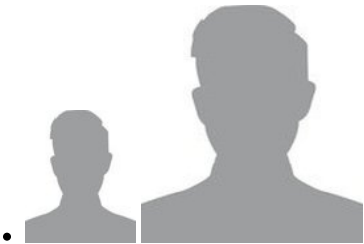
- [Tweets](#)

stated on June 11, 2023 in una publicación en Twitter:

[Una iglesia fue “quemada por un rayo en Boston, EE. UU. durante una ceremonia de boda gay. Este 5 de mayo de 2023, sin sobrevivientes entre los participantes”.](#)



By Maria Briceño • June 20, 2023



• [Mark Kaye](#)

stated on June 16, 2023 in a TikTok post:

[Former Attorney General Bill Barr](#) "says Donald Trump is a spy."





By Tom Kertscher • June 20, 2023



[Facebook posts](#)

stated on May 31, 2023 in una publicación de Facebook:

[“Arma que EE.UU. le dio a Ucrania es vista en manos de cárteles”.](#)



By Marta Campabadal Graus • June 20, 2023



[Facebook posts](#)

stated on May 10, 2023 in una publicación en Facebook:

[Científicos descubren que al “consumir 3 tazas de leche diaria, las personas tienen más riesgos de desarrollar cáncer de mama”.](#)

barely-true



By Maria Briceño • June 20, 2023



• [Facebook posts](#)

stated on June 16, 2023 in a Facebook post:

[“Ringing in your ears can cause total shutdown in under two years” but a pill can make tinnitus disappear.](#)



By Ciara O'Rourke • June 19, 2023



• [Ron DeSantis](#)

stated on June 17, 2023 in a tweet:

[Protests of \(Sisters of Perpetual Indulgence\) at a Los Angeles Dodgers game led to a "virtually empty stadium for the game itself."](#)





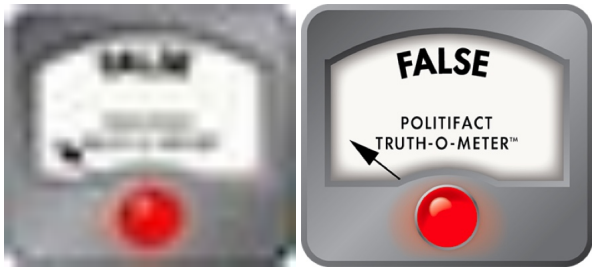
By Jeff Cercone • June 19, 2023



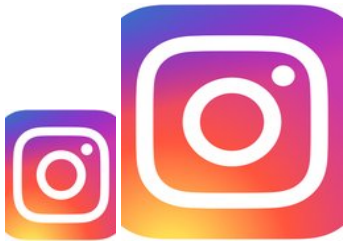
[Facebook posts](#)

stated on June 16, 2023 in a Facebook post:

[Video shows "current weather situation in Karachi."](#)



By Ciara O'Rourke • June 19, 2023



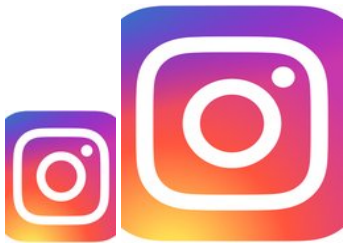
[Instagram posts](#)

stated on May 11, 2023 in an Instagram post:

[Video is evidence the moon landing was faked because someone would have had to stay behind to film](#)



By Ciara O'Rourke • June 19, 2023



[Instagram posts](#)

stated on June 7, 2023 in an Instagram post:

[Recent wildfires put more carbon in the atmosphere than "the human race has put out in the last 100 years."](#)



By Tom Kertscher • June 19, 2023

[Load more](#)

**Support independent fact-checking.  
Become a member!**

In a world of wild talk and fake news, help us stand up for the facts.

[Sign me up](#)



#### Offices

##### [District of Columbia](#)

1800 I Street NW  
Washington, DC 20006

##### [Florida](#)

801 3rd St. S  
St. Petersburg, FL 33701  
727-821-9494

#### People

- [All People](#)
- [Joe Biden](#)
- [Kamala Harris](#)
- [Charles Schumer](#)
- [Mitch McConnell](#)
- [Bernie Sanders](#)
- [Nancy Pelosi](#)
- [Donald Trump](#)

#### State Editions

- [California](#)
- [Florida](#)
- [Illinois](#)
- [Iowa](#)
- [Missouri](#)
- [New York](#)
- [North Carolina](#)
- [Pennsylvania](#)
- [Texas](#)
- [Virginia](#)
- [West Virginia](#)
- [Vermont](#)
- [Wisconsin](#)
- [Michigan](#)

**About Us**

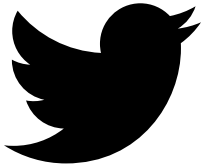
- [Our Process](#)
- [Our Staff](#)
- [Who pays for PolitiFact?](#)
- [Advertise with Us](#)
- [Corrections and Updates](#)

**RSS Feeds**

- [Recent Articles and Fact-checks](#)
- [Recent Fact-checks](#)

[Suggest a Fact-check](#)

**Follow us**



**The Facts Newsletter**

Enter your email

Sign up

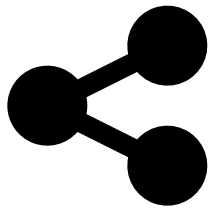
[Terms & Conditions](#)

[Privacy Policy](#)

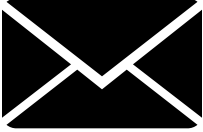
[Copyright](#)

©All Rights Reserved Poynter Institute 2020, a 501(c)(3) nonprofit organization

POLITIFACT | Poynter.







**WE'LL FIND THE  
DOORS FOR YOU**



**You decide  
which one  
to open**

Find your  
next job

**Media Job Board**  
MEDIAJOBBOARD.COM



















